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Neonatal Group B Streptococcal Disease: New Guidelines For Prevention

Group B streptococcus (GBS) or *Streptococcus agalactiae*, is a gram-positive coccus that causes invasive disease in newborns, pregnant women, and adults with underlying medical conditions. Prevention of neonatal GBS disease has recently been identified as a public health priority (1). This article reviews neonatal GBS disease incidence, recently published prevention guidelines including proposed roles for public health departments, and the scientific rationale for these guidelines.

Previously known primarily as a cause of mastitis in cattle, GBS has emerged as the most common cause of bacterial sepsis and meningitis among newborns in the United States. Currently, the rate of neonatal group B streptococcal disease is 1.8 per 1000 live births nationwide. About 80% of disease is "early onset" (i.e., occurring in the first week of life)(2); about 20% of cases occur after the first week, primarily within the first 3 months of life. Although the rate of disease is higher in preterm infants, 75% of infants with early onset GBS disease are born at term (2). Up to 15% of those with meningitis suffer long-term neurologic sequelae; the case fatality rate is estimated to be 6% (2).

Because early onset disease is acquired in utero or during birth, intervention efforts must be taken with pregnant women rather than with newborns. Since an effective vaccine does not exist, the only intervention currently available is the administration of antibiotics during labor. In order to avoid unnecessary costs, adverse reactions, and limit the development of antimicrobial resistance, antibiotics should be targeted to women at highest risk of delivering an infant with GBS disease.

In the 1980s, maternal risk factors for early onset neonatal GBS disease were identified. These included rectovaginal GBS colonization and certain labor risk factors: preterm delivery, prolonged rupture of membranes, and fever during labor. Women at greatest risk were those who were both colonized and had a labor risk factor. A prospective, controlled clinical trial published in 1986 revealed that antibiotics administered during labor (intrapartum) to colonized women with selected risk factors (preterm labor, preterm rupture of membranes, or prolonged rupture of membranes at term) prevented early onset GBS disease and also reduced postpartum maternal illness (3). In 1992 the American Academy of Pediatrics (AAP) used the results of this clinical trial as a basis for their prevention guidelines (4). These guidelines recommended screening all pregnant women for vaginal/rectal GBS colonization at 26-28 weeks of gestation and then providing intrapartum antibiotics to colonized women who developed: intrapartum fever, preterm membrane rupture or labor, or membranes ruptured for more than 12 hours at term.

Although scientifically sound, the implementation of the AAP guidelines by obstetricians was limited for several reasons. 1) There is uncertainty about whether or not women would be still be colonized at labor (when antibiotics would be administered). After all, a single set of prenatal cultures is not entirely predictive of colonization at labor and a reliable, rapid test that could be administered and read at labor onset is not available. 2) Screening all women during prenatal care and having the results available during labor can be logistically difficult. 3) Gaining acceptance by obstetrical patients of a strategy where antibiotics are limited to colonized women with labor risk factors (rather than administering antibiotics to ALL colonized women) was perceived as problematic.

In 1993, the American College of Obstetricians and Gynecologists (ACOG) recommended a different, pragmatic approach to prevention of neonatal GBS disease (5,6). In this strategy, intrapartum antibiotics were to be administered to ALL women with preterm labor, preterm rupture of membranes, fever, prolonged rupture of membranes (>18 hours) or who had a previous child affected by symptomatic GBS infection, regardless of GBS colonization. Although screening for GBS colonization is not required by this strategy, antibiotics would

ultimately be provided to about 25% of women in labor, while only 5% of all pregnant women would be candidates for chemoprophylaxis if the AAP guidelines were utilized.

In 1994, legislation was passed in California that directed the California Department of Health Services (CDHS) to "convene a consensus conference to address the issue of testing or treatment to prevent neonatal group B streptococcal disease." On March 10, 1995, in a meeting with representatives from CDHS, AAP, ACOG, the Centers for Disease Control and Prevention (CDC), and the Group B Strep Association (an association of parents with children who had neonatal GBS disease), consensus guidelines were drafted. These were published in an MMWR supplement in June 1996 (1). Endorsed both by CDC, ACOG, and the AAP, these guidelines are a practical and effective approach to preventing neonatal GBS disease.

The key recommendations are:

1) A plan for preventing neonatal GBS disease should be conveyed to all women by every obstetrical practice during prenatal care visits.
2) Either of two strategies can be followed for selection of women for intrapartum chemoprophylaxis: a) women in preterm labor (<37 weeks gestation)or with prolonged rupture of membranes (>18 hours) or with fever in labor (>38.0 deg. C) regardless of colonization status or b) women in preterm labor (<37 weeks gestation) or women identified as colonized with GBS through rectovaginal screening at 35-37 weeks gestation (with or without labor risk factors).
3) Regardless of which strategy is used, all women with GBS bacteriuria or with a previous infant with GBS disease would also receive intrapartum chemoprophylaxis
4) A plan for the care of infants born to women who receive intrapartum chemoprophylaxis should be developed
5) Local health departments should conduct surveillance for neonatal GBS disease and a) determine the impact of the guidelines on GBS disease, b) the frequency of adverse reactions and c) the frequency of antimicrobial resistance from the increased use of intrapartum antibiotics.

The two strategies for selecting women for intrapartum chemoprophylaxis are shown in Figures 1 and 2. The procedures for detecting colonization in pregnant women are provided in Table 1. An algorithm that could be used for infants of mothers who received intrapartum chemoprophylaxis is shown in Figure 3.

In California, active surveillance for GBS disease is conducted by the Emerging Infections Program in Contra Costa, San Francisco, and Alameda counties. To promote prevention of neonatal GBS disease in California, CDHS plans to provide all obstetricians with a summary of the guidelines and to assess the use of the guidelines by obstetricians.

References

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